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THE

ONTARIO WATER RESOURCES

COMMISSION

WATER POLLUTION SURVEY

of the

TOWN OF HAILEYBURY

DISTRICT OF TIMISKAMING

1966

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TOWN OF HAILEYBURY - 1966  
DISTRICT OF TIMISKAMING

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REPORT

on a

WATER POLLUTION SURVEY

of the

TOWN OF HAILEYBURY

District of Timiskaming

January 1966

Division of Sanitary Engineering

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# ONTARIO WATER RESOURCES COMMISSION

## REPORT

### INTRODUCTION

A water pollution survey was made of the Town of Haileybury on October 21, 1965. The purpose of the survey was to locate and record all significant sources of water pollution within the town. Such surveys are performed routinely, and upon request, by the Ontario Water Resources Commission as a basis for evaluating all existing and potential sources of pollution. Where sources of pollution are found, corrective action is requested by the Commission.

The information received from the town officials during this investigation is gratefully acknowledged.

### I GENERAL INFORMATION

The Town of Haileybury is located within the Township of Bucke in the District of Timiskaming. The town, with a 1964 assessed population of 2,842 (1965 Municipal Directory), covers an area of approximately 750 acres and is situated on the west shore of Lake Timiskaming.

Haileybury lies within the Lake Timiskaming watershed. An overburden of blue clay is predominant with the land rising sharply to the west from Lake Timiskaming to a height of 250 feet above the lake water level.

The Town of Haileybury is not a large industrial area; however, tourism is predominant during the summer months.

## II WATER USES

### 1. Municipal Water System

Water for the Town of Haileybury is supplied by the municipal water works. Water is obtained from Lake Timiskaming and flows by gravity to a raw water well where chlorine is added. The service pumps deliver the water through five vertical pressure filters to the distribution system. Alum and coagulant aid (Nalcolyte 110) are introduced to the water immediately prior to filtration. A ground storage reservoir with a capacity of approximately 175,000 gallons is included in the distribution system.

The average daily water pumpage for 1964 was reported as 424,000 gallons. At the time of the last OWRC inspection, the bacteriological quality of the water was satisfactory.

### 2. Recreational

Lake Timiskaming, being the major watercourse, is used for such recreational purposes as swimming, boating, and fishing.

## III WATER POLLUTION

### 1. Sanitary Waste Disposal

#### (a) Existing Conditions

Approximately 80 per cent of the town reportedly is serviced by sanitary sewers and the remainder utilize septic tank and subsurface tile bed systems. There is a separate storm sewer system serving a portion of the town. During heavy rains, large quantities of storm water enter the sanitary sewer system.

The existing sanitary sewers discharge to a three compartment reinforced concrete septic tank of 75,255 gallons capacity. It is located on the west shore of Lake Timiskaming near the southerly limit of the developed area of the town. The effluent from the septic tank is discharged directly into Lake Timiskaming. During periods of high lake water levels, the septic tank is completely submerged.

Where septic tank and subsurface tile bed systems are employed, seepage from the tile bed systems has access to open ditches and small watercourses. Reportedly, odours characteristic of septic sewage are predominant in these areas during the summer months. Malfunctioning of these waste disposal methods is apparently caused by the clayey soil conditions. These areas are located to the south and northwest of town.

(b) Proposed Water Pollution Control Facilities

A preliminary engineering report has been prepared by Hisey and Barrington, Consulting Engineers, for a proposed sewage works. The OWRC preliminary certificate of approval (65-A-433) for the construction of the water pollution control facilities has been issued.

The proposed sewage works consist of a sewage pumping station, located in the vicinity of the existing septic tank, and a forcemain to the proposed 350,000 gpd modified activated sludge type sewage treatment plant (contact stabilization process). Effluent will be discharged to Lake Timiskaming.

## 2. Refuse Disposal

The refuse disposal site is located one mile south of the Town of Haileybury. It is a burn and cover type of dump. Refuse is bulldozed over the face of the dump towards a watercourse which flows to Lake Timiskaming. The foot of the dump is approximately 150 feet from this watercourse and there is a possibility that leachate from the dump may gain access to the watercourse.

## 3. Discussion of Sample Analyses

The laboratory results of the bacteriological examinations and the chemical analyses of samples collected from the watercourses and outfalls are included in the tables appended to this report. Descriptions of the tests and an outline of the OWRC objectives are also included.

Generally, the water samples collected from the watercourses and open ditches located in the southern section of town not serviced by the municipal sanitary sewers, revealed that the total coliform organisms exceeded the OWRC objective of not greater than 2,400 coliform organisms per 100 ml.

The coliform counts, indicative of fecal pollution, are probably caused by malfunctioning septic tank and subsurface tile bed systems. Also, a number of sink and cellar drains are directed to the open ditches. On the northeast corner of Little and Meridian streets, two such outfalls occur. These were not sampled as there was little or no flow.

A sample collected from the outfall with sampling point number, HN-0.38P, revealed a total coliform count of 11,200,000 coliform organisms per 100 ml. This excessive concentration would adversely affect the water quality of the open ditches and consequently Lake Timiskaming.

A number of water samples collected from the municipal storm sewers outfalling to Lake Timiskaming indicated that polluting wastes were being directed to the storm sewers.

The water sample, collected from the storm sewer at the bottom of View Street, contained a total coliform concentration of 254,000 coliform organisms per 100 ml. This is indicative of fecal pollution.

A sample obtained from the Ammell Street storm sewer revealed a 5-Day BOD and suspended solids concentration of 24 ppm and 61 ppm, respectively. This exceeds the OWRC maximum objectives of 15 ppm for both concentrations.

The discharge from the Main Street storm sewer showed that the 5-Day BOD and suspended solids concentration exceeded the OWRC maximum objectives. A total coliform count of 39,000 coliform organisms per 100 ml was obtained indicating fecal pollution. In addition, an ABS concentration of 0.4 ppm revealed the presence of domestic wastes.

The samples collected from the storm sewer located at the bottom of Broadway Street, revealed a 5-Day BOD and suspended solids

concentration of 1,540 ppm and 3,768 ppm, respectively. This greatly exceeds the OWRC maximum objectives of 15 ppm for both concentrations. A phenols concentration of 80 ppb was also obtained. This exceeds the OWRC recommended limit of 20 ppb. The phenol content is indicative of oil pollution. A total coliform count of 3,300,000 coliform organisms per 100 ml that was obtained revealed fecal pollution.

Coliform counts and phenol concentrations obtained from the storm sewer discharges reveal that illegal connections exist whereby sanitary sewage and industrial wastes are being directed to the storm sewers.

A sample of the municipal septic tank effluent revealed a 5-Day BOD and suspended solids concentration of 43 ppm and 65 ppm, respectively. These concentrations exceed the OWRC recommended objectives of 15 ppm for both concentrations. The sample also showed a total coliform count of 9,600,000 coliform organisms per 100 ml.

The effect of the polluting wastes from the municipal septic tank and from the storm sewer system on the water quality of Lake Timiskaming is revealed by the bacteriological examination of the lake water. Of the eight water samples collected, five samples revealed total coliform organisms in excess of the OWRC maximum objective of 2,400 coliform organisms per 100 ml.

The importance of instituting a sewage works programme is emphasized by the fact that the water quality of Lake Timiskaming

has been adversely affected by the discharging of contaminating wastes to this watercourse.

#### IV SUMMARY AND CONCLUSIONS

A municipal water pollution survey was undertaken in the Town of Haileybury on October 21, 1965.

The Town of Haileybury has a municipal water supply. Water, obtained from Lake Timiskaming, is chlorinated, filtered, and pumped to the distribution system.

A separate sewer system services the town. Sanitary sewage is directed to a three compartment septic tank with the effluent discharging to Lake Timiskaming.

The refuse disposal site may be a possible source of water pollution as refuse is being dumped towards a tributary of Lake Timiskaming. It would be advisable to fence off the section of the dump closest to the tributary and proceed dumping away from the watercourse.

The results of this survey reveal that polluting wastes are gaining access to the municipal storm sewers and open ditches via illegal connections of malfunctioning septic tank and subsurface tile bed systems.

The municipal water pollution control plant is overloaded and final septic effluent is adversely affecting the water quality of Lake Timiskaming.

The discharge of polluting wastes to a watercourse is prohibited by the Ontario Water Resources Commission Act and action should be taken to correct this undesirable situation.

V RECOMMENDATIONS

1. The Town of Haileybury should continue its efforts to have the water pollution control project realized.

2. The discharge of polluting wastes from the municipal storm sewers to Lake Timiskaming should be eliminated.

3. Sections of the refuse disposal site should be fenced off to prevent the dumping of refuse towards the tributary of Lake Timiskaming.

All of which is respectfully submitted,

District Engineer C.E. McIntyre, P.Eng.,

Approved by J.R. Barr, Director,  
Div.of Sanitary Engineering.

/elb

Prepared by: G.K. Boretski,  
Engineer's Assistant.

## APPENDIX

### THE SIGNIFICANCE OF LABORATORY RESULTS

The OWRC objectives for surface waters in Ontario are as follows:

5-Day BOD - not greater than 4 ppm  
Total coliform organisms - not greater than 2,400  
coliforms per 100 ml.

#### Phenolic Equivalents

Average - not greater than 2 ppb  
Maximum - not greater than 5 ppb

pH - 6.7 to 8.5

Adequate protection for these waters, except in specific instances influenced by local conditions, should be provided if the following waste discharge concentrations are obtained:

<u>Item</u>	<u>Concentration</u>
5-Day BOD	not greater than 15 ppm
Suspended Solids	not greater than 15 ppm
Phenols	not greater than 20 ppb
pH	5.5 to 10.6
Iron	not greater than 15 ppm
Ether Solubles (Oil)	not greater than 15 ppm

### EXPLANATION OF LABORATORY RESULTS

#### Bacteriological Examinations

The Membrane Filter technique is used to obtain a direct enumeration of coliform organisms. These organisms are the normal inhabitants of the intestines of man and other warm-blooded animals. They are always present in large numbers in sewage and are, in general, relatively few in number in other stream pollutants. The

results are reported as M.F. coliform count per 100 millilitres.

#### Biochemical Oxygen Demand (BOD)

The biochemical oxygen demand test indicates the amount of oxygen required for stabilization of the decomposable organic matter found in sewage, sewage effluent, polluted waters, or industrial wastes, by aerobic biochemical action. The time and temperature used are five (5) days and 20°C, respectively.

#### Solids

The analyses for solids include tests for total, suspended, and dissolved solids. Total solids is a measure of the solids in solution and in suspension. Suspended solids indicate the measure of undissolved solids of organic or inorganic nature whereas the dissolved solids are a measure of those solids in solution.

#### Phenolic Compounds

Phenols react with chlorine to produce intensely aromatic compounds. These compounds, even when highly diluted, may give a taste and odour to the water which is variously described as medicinal, chemical, or iodoform. Phenols taint fish and are toxic to fish, depending on the concentration. Normal water contains no phenolic compounds.

#### ABS (Alkyl Benzene Sulfonate)

The alkyl benzene sulfonate portion of the anionic detergents is reported in ppm. The test is generally employed to indicate the presence of illegal discharge of waste water to storm drains.

The popular use of synthetic detergents for general cleaning purposes has resulted in the incidence of residual ABS in streams. As an objective, the ABS concentration should not exceed 0.5 ppm in water used for domestic purposes.

TOWN OF HALLEYBURY

LAKE TIMISKAMING

TABLE I

<u>SAMPLING POINT NO.</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>5-DAY BOD (PPM)</u>	<u>TOTAL (PPM)</u>	<u>SOLIDS SUSP. (PPM)</u>	<u>DISS. (PPM)</u>	<u>M.F. COLIFORM COUNT/100 ML</u>
OLT-429.80	LAKE TIMISKAMING AT ALBERT STREET.	OCT. 22/65	1.8	118	4	114	280
OLT-429.85	LAKE TIMISKAMING AT LITTLE STREET.	SEPT. 23/65	0.4	76	12	64	17,500
OLT-429.93	LAKE TIMISKAMING AT ELLIOT STREET.	SEPT. 23/65	2.6	208	104	104	55,000
		OCT. 22/65	2.4	172	2	170	800
OLT-429.97	LAKE TIMISKAMING AT WPCP.	SEPT. 23/65	0.7	78	15	63	270,000
OLT-430.03	LAKE TIMISKAMING AT VIEW STREET.	OCT. 22/65	3.8	202	23	179	102,000
OLT-430.23	LAKE TIMISKAMING AT MARCELLA STREET.	SEPT. 23/65	1.2	70	7	63	2,900
OLT-430.40	LAKE TIMISKAMING AT BROADWAY STREET.	SEPT. 23/65	0.9	64	10	54	2,100
OLT-430.44	LAKE TIMISKAMING AT BROWNING STREET.	SEPT. 23/65	1.3	74	6	68	600

TOWN OF HAILEYBURY

OUTFALLS TO LAKE TIMISKAMING

TABLE 2-1

<u>SAMPLING POINT NO.</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>5-DAY BOD (PPM)</u>	<u>SOLIDS</u>		<u>DISS. (PPM)</u>	<u>PHENOLS (PPB)</u>	<u>ANIONIC DETERGENTS AS ABS (PPM)</u>	<u>M.F. COLIFORM COUNT/100 ML</u>
OLT-429.89 W	18-INCH DIAMETER TILE STORM SEWER.	OCT. 22/65	4.2	560	18	542			64,000
OLT-429.92 D	DRAINAGE DITCH AT 18-INCH DIAMETER CORRUGATED CULVERT.	OCT. 22/65	NO FLOW NOTED.						
OLT-429.95 D	DRAINAGE DITCH AT 12-INCH DIAMETER CORRUGATED CULVERT	OCT. 22/65	NO FLOW NOTED.						
OLT-429.97 T	MUNICIPAL WPCP EFFLUENT.	OCT. 21/65	43	490	65	425			9,600,000
OLT-430.01 W	3-FOOT DIAMETER CORR- UGATED STORM SEWER AT VIEW STREET.	OCT. 22/65	1.6	376	4	372			254,000
OLT-430.03 D	DRAINAGE DITCH AT 24-INCH CORRUGATED CULVERT.	OCT. 22/65	1.5	2636	1	2635			320
OLT-430.13 D	DRAINAGE DITCH AT 12-INCH DIAMETER CORRUGATED CULVERT.	OCT. 22/65	1.1	2260	1	2259			160
OLT-430.23 W	24-INCH DIAMETER CORRUGATED STORM SEWER AT MARCELLA STREET.	OCT. 22/65	NO FLOW NOTED.						
OLT-430.27 W	3-FOOT DIAMETER CORRUGATED STORM SEWER AT AMWELLS ST.	OCT. 22/65	24	520	61	459			0
OLT-430.33 W	24-INCH DIAMETER CONCRETE STORM SEWER AT MAIN ST.	SEPT. 23/65	39	724	94	630			39,000
		OCT. 22/65	2.6	456	1	455		0.4	380
OLT-430.38 W	18-INCH DIAMETER CORRUGATED STORM SEWER AT BROADWAY STREET.	OCT. 22/65	1.6	412	3	409			27,000

TOWN OF HAILEYBURY  
OUTFALLS TO LAKE TIMISKAMING

TABLE 2-2

<u>SAMPLING POINT NO.</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>5-DAY BOD (PPM)</u>	<u>TOTAL (PPM)</u>	<u>SOLIDS SUSP. (PPM)</u>	<u>DISS. (PPM)</u>	<u>PHENOLS (PPB)</u>	<u>ANIONIC DETERGENTS AS ABS (PPM)</u>	<u>M.F. COLIFORM COUNT/100 ML</u>
OLT-430.40 W	12-INCH DIAMETER CORRUGATED STORM SEWER AT BROADWAY STREET.	OCT. 22/65	1540	4364	3768	596	80		3,300,000
OLT-430.56 W	12-INCH DIAMETER CLAY STORM SEWER AT SETON STREET.	OCT. 22/65	INSUFFICIENT FLOW.						
OLT-430.60 W	24-INCH DIAMETER CORRUGATED STORM SEWER.	OCT. 22/65	NO FLOW NOTED.						
OLT-430.67 W	12-INCH DIAMETER CORRUGATED STORM SEWER.	OCT. 22/65	2.4	432	3	429			1,000

TOWN OF HAILEYBURY  
OUTFALLS TO LAKE TIMISKAMING

TABLE 2-3

<u>SAMPLING POINT NO</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>5-DAY BOD (PPM)</u>	<u>TOTAL (PPM)</u>	<u>SOLIDS SUSP. (PPM)</u>	<u>DISS. (PPM)</u>	<u>M.F. COLIFORM COUNT/100 ML</u>
OLT-430.75 W	24-INCH DIAMETER CORRUGATED STORM SEWER.	OCT. 22/65	NO FLOW NOTED.				
OLT-430.84 W	18-INCH DIAMETER CORRUGATED STORM SEWER.	OCT. 22/65	NO FLOW NOTED.				
OLT-430.90 W	3-FOOT DIAMETER CORRUGATED STORM SEWER.	OCT. 22/65	0.9	304	1	303	230
OLT-430.96 W	24-INCH DIAMETER CORRUGATED STORM SEWER.	OCT. 22/65	NO FLOW NOTED.				
OLT-431.00 D	DRAINAGE DITCH AT 18-INCH CORRUGATED CULVERT.	OCT. 22/65	NO FLOW NOTED.				
OLT-431.10 D	SPRING AT 3-FOOT DIAMETER CORRUGATED CULVERT.	OCT. 22/65	0.9	354	3	351	120
OLT-431.14 D	DRAINAGE DITCH AT 24-INCH DIAMETER CORRUGATED CULVERT.	OCT. 22/65	NO FLOW NOTED.				
OLT-431.18 D	DRAINAGE DITCH AT 2-24- INCH DIAMETER CORRUGA- TED CULVERT.	OCT. 22/65	0.9	306	1	305	80
OLT-431.29 D	DRAINAGE DITCH AT 24-INCH DIAMETER CORRUGATED CULVERT.	OCT. 22/65	NO FLOW NOTED.				
OLT-431.34 D	DRAINAGE DITCH AT 18-INCH CORRUGATED CULVERT.	OCT. 22/65	0.9	354	1	353	80
HS-0.01	CREEK AT CONFLUENCE WITH LAKE TIMISKAMING.	OCT. 22/65	1.1	466	4	462	820
HS-0.055	CREEK AT LITTLE ST.	SEPT.23/65	0.6	454	9	445	90,000

TOWN OF HAILEYBURY  
OUTFALLS TO LAKE TIMISKAMING

TABLE 2-4

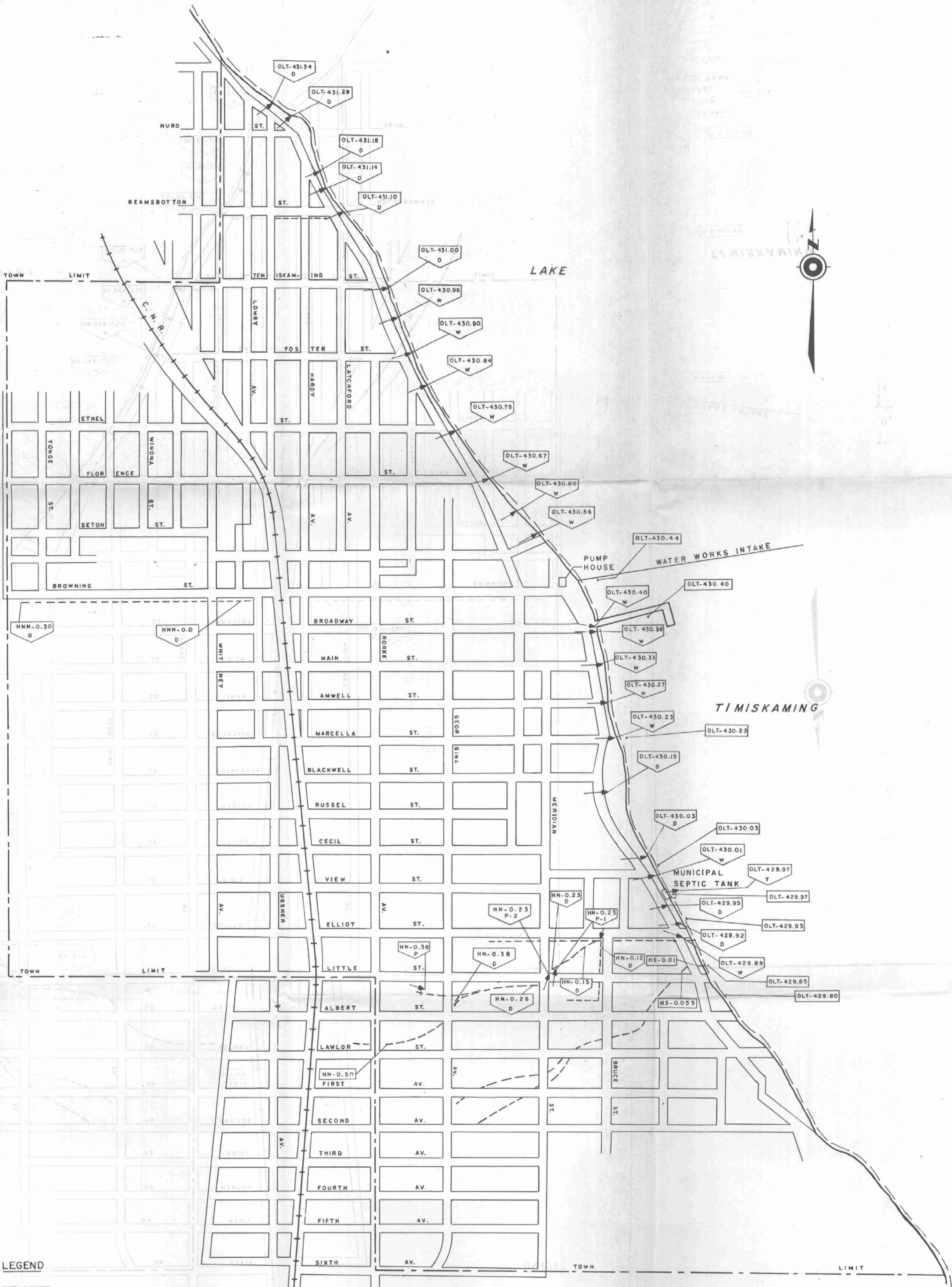
<u>SAMPLING POINT NO.</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>5-DAY BOD (PPM)</u>	<u>TOTAL (PPM)</u>	<u>SOLIDS SUSP. (PPM)</u>	<u>DISS. (PPM)</u>	<u>M.F. COLIFORM COUNT/100 ML</u>
HN-0.12 D	OPEN DITCH AT BRUCE STREET.	OCT. 22/65	4.8	550	14	536	270,000
HN-0.15 D	DRAINAGE DITCH.	SEPT. 23/65	1.6	696	63	633	14,700
		OCT. 22/65	4.2	562	10	552	18,000
HN-0.23 D	DRAINAGE DITCH.	OCT. 22/65	5.6	556	32	524	140,000

TOWN OF HAILEYBURY

TABLE 2-5

OUTFALLS TO LAKE TIMISKAMING

<u>SAMPLING POINT NO.</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>5-DAY BOD (PPM)</u>	<u>TOTAL (PPM)</u>	<u>SOLIDS SUSP. DISS. (PPM) (PPM)</u>	<u>ANIONIC DETERGENTS AS ABS (PPM)</u>	<u>M.F. COLIFORM COUNT / 100 ML</u>
HN-0.23 P-1	4-INCH DIAMETER AS- BESTOS SANITARY SEWER.	OCT. 22/65	INSUFFICIENT FLOW.				
HN-0.23 P-2	4-INCH DIAMETER TILE SANITARY SEWER.	OCT. 22/65	NO FLOW NOTED.				
HN-0.26 D	DRAINAGE DITCH	OCT. 22/65	8.0	738	134 604		92,000
HN-0.38 D	DRAINAGE DITCH	OCT. 22/65	6.4	638	43 595		74,000
HN-0.38 P	4-INCH DIAMETER TILE SANITARY SEWER.	OCT. 22/65	12	662	12 650	1.7	11,000,000
HN-0.50 D	DRAINAGE DITCH AT RORKE AVE.	OCT. 22/65	4.4	652	144 508		39,000
HNN-0.0 D	BROWNING STREET - OPEN DITCH DOWNSTREAM.	OCT. 22/65	2.4	460	3 457		--
HNN-0.30 D	BROWNING STREET - OPEN DITCH UPSTREAM.	OCT. 22/65	0.9	274	1 273		50



**LEGEND**

- OLT-429.80 - STREAM SAMPLING POINT SHOWING MILEAGE
- OLT-431.34 D - OUTFALL SHOWING STREAM AND MILEAGE
- TYPE OF OUTFALL
- D - DRAINAGE OR DITCH
- P - PRIVATE SEWER
- T - TREATMENT PLANT EFFLUENT
- W - STORM SEWER

REFUSE  
DISPOSAL  
SITE

ONTARIO WATER RESOURCES COMMISSION	
<b>TOWN OF HAILEYBURY WATER POLLUTION SURVEY 1966</b>	
SCALE: 500 250 0 500 1000 FT.	
DRAWN BY: R.S.	DATE: MARCH 1966
CHECKED BY:	DRAWING NO: 66-19